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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/822,175	04/02/2001	Kazuhiko Yanagawa	HITA.0045	7332

7590 01/21/2004

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EXAMINER

RUDE, TIMOTHY L

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 01/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/822,175

Applicant(s)

YANAGAWA ET AL.

Examiner

Timothy L Rude

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 35-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 35-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Claims

1. Claim 35 is amended. Claims 37-40 are added.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 35-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Onishi et al (Onishi) USPAT 5,643,471 in view of Kishimoto et al (Kishimoto) USPAT 6,396,559 B1.

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As to claims 35, 37, 38, and 40, Onishi discloses in Figures 12A-12C a liquid crystal display device of Example 1 (col. 17, line 60 through col. 33, line 34; especially col. 31, line 1 through col. 33, line 34) comprising a pair of substrates, 1a and 1b, as disposed to spatially oppose each other with a layer of liquid crystal material interposed therebetween and a seal material, 4, used for adhesion of one of the substrates to a remaining substrate, said seal material also having a function of encapsulating the liquid crystal material, wherein

a plurality of photolithographically formed (col. 31, lines 25-32) projection bodies, 10b, are precisely dispersed on one of said substrates in a predetermined shape thereof at a desired location thereon, and then said seal material is formed on said one of said substrates to bury said projection bodies therewithin (as illustrated in Figure 12B) (see also masks illustrated in Figures 11 and 13).

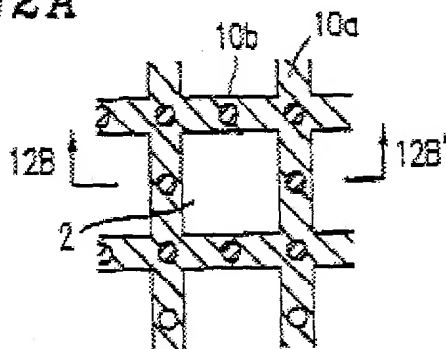
FIG. 12A

FIG.12B

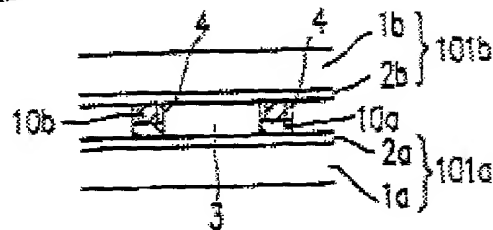
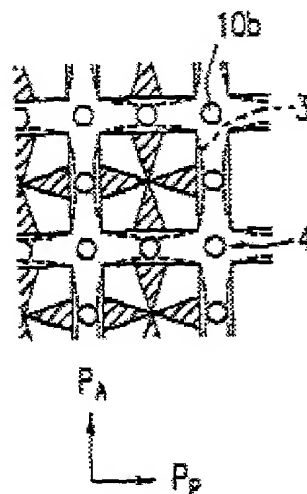


FIG.12C



Onishi does not explicitly disclose a device wherein each of the projection bodies has a first contacting area different from a second contacting area nor does Onishi explicitly disclose projection bodies with at least one tapered surface extending between substrates. However, please note that commonly used photolithographic techniques inherently produce tapered walls in photolithographic material used for spacer (projection body) production due to non-zero dispersion of light through the mask. In other words, it is almost impossible to avoid tapered spacers when photolithography is used as the method of manufacture of said spacers. Therefore, examiner maintains the

spacers of Onishi, being photolithographically produced, are almost certainly tapered and would meet Applicant's structural limitations as claimed despite the lack of explicit disclosure of taper by Onishi.

Kishimoto teaches in conventional example one (col. 26, line 58 through col. 27, line 56) Figures 21E and 21F, the use of tapered pillar-like protrusions, 7a [Applicant's projection bodies with a first contacting area different (larger) from a second contacting area (smaller) and with at least one tapered surface extending between substrates], as an art recognized configuration suitable for the intended purpose of forming spacers to achieve satisfactory cell gap.

FIG. 21E

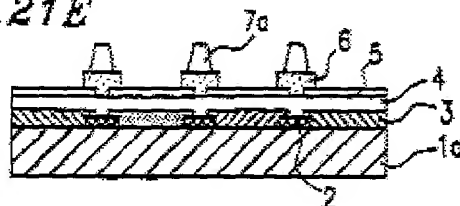
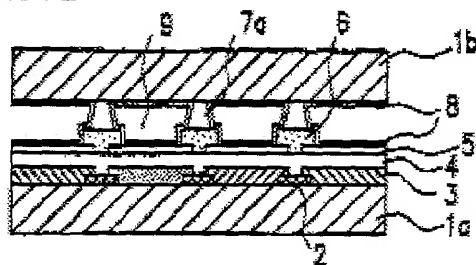


FIG. 21F



Kishimoto is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to add projection bodies having a first contacting area larger than a second contacting area wherein said projection bodies have at least

one tapered surface extending between substrates as an art recognized configuration suitable for the intended purpose of forming spacers to achieve satisfactory cell gap.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of Onishi with projection bodies having a first contacting area larger than a second contacting area wherein said projection bodies have at least one tapered surface extending between substrates of Kishimoto as an art recognized configuration suitable for the intended purpose of forming spacers to achieve satisfactory cell gap (MPEP 2144.07).

As to claims 36 and 39, Onishi discloses in Figures 12A-12C a liquid crystal display device of Example 1 (col. through col. 33, line 34) the liquid crystal display device as recited in claim 36, wherein said plurality projection bodies are parallel-disposed (columns are parallel to each other and rows are parallel to each other, per Figure 12C).

3. Anticipated modifications (please see MPEP 706.07(a)) to claims 35-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Onishi and Kishimoto, as applied to claims 35 and 36 above, in view of Nakahara et al (Nakahara) USPAT 6,239,855 B1.

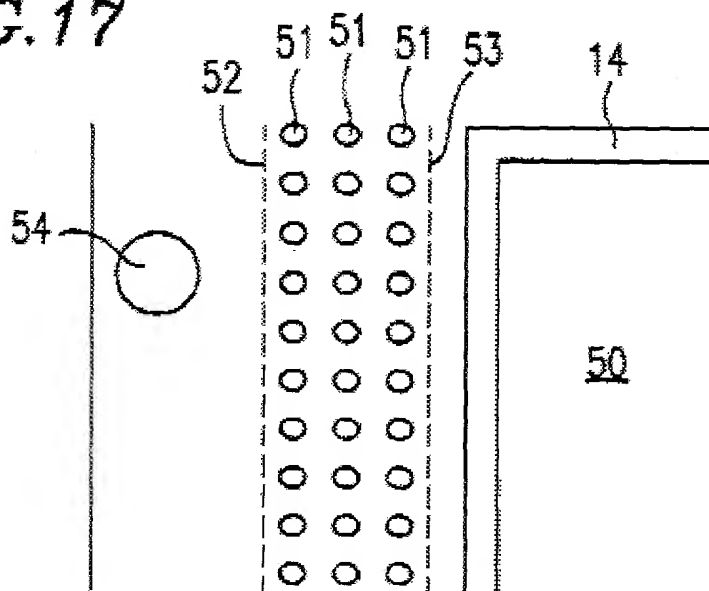
As to anticipated modified claims 35-40, Onishi in view of Kishimoto disclose the liquid crystal display device above with photolithographically formed spacers buried in

seal material about the entire perimeter of the display area (seal outboard outermost pixels).

Onishi in view of Kishimoto does not explicitly disclose a device wherein a plurality of projection bodies are parallel-disposed in more than one row within a single bead of seal material disposed about the perimeter of the display area.

Nakahara teaches in Figure 17 a device comprising a plurality of parallel-disposed sealant particles, 51, (Applicant's projection bodies) about the perimeter of the display area to minimize stress distortion and waviness of the glass plates (col. 12, line 66 through col. 13, line 8).

FIG. 17



Nakahara is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to add a plurality of parallel-disposed sealant

particles (Applicant's projection bodies) to minimize stress distortion and waviness of the glass plates

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of Onishi in view of Kishimoto which has photolithographically formed projection bodies buried in seal material, with the plurality of parallel-disposed sealant particles (Applicant's projection bodies) about the perimeter of the display area of Nakahara to minimize stress distortion and waviness of the glass plates.

Response to Arguments

4. Applicant's arguments filed on 16 October 2003 with respect to claims 35 and 36 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy L Rude whose telephone number is (703) 305-0418. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H Kim can be reached on (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4900.



TLR
January 06, 2004

Timothy L Rude
Examiner
Art Unit 2871



TOANTON
PRIMARY EXAMINER